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EXAMINER

ZALUKAEVA, TATYANA

ART UNIT

PAPER NUMBER

1713

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/508,378

Applicant(s)

SANCHEZ ET AL.

Examiner

Tatyana Zalukaeva

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) 3,6-13,15,17-28,30-33,35 and 36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,14,16,29 and 34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-36 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,5. 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION*****Election/Restrictions***

1. Applicant's election with traverse of Group I, claims 1-23 and 29 in Paper No. 8 is acknowledged. The traversal is on the ground(s) that the search of claims of Group II will necessarily turn up art relevant with regard to method of making a block copolymer of acrylonitrile, and that such search can be made without a serious burden on the U.S. Patent and Trademark Office. This is not found persuasive because the consideration of undue burden is one that must be made by the Examiner, Applicants' arguments that the search of one invention must necessarily result in a search of the other one has been considered, but is not persuasive insofar as the searches are not co-extensive and additional search would of necessity, be required for the combination of inventions. As it was shown in the previous Office Action on the merits, the inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, although they share the special technical feature, this special technical feature does not define a contribution over the prior art for the following reasons: Claim 1 is either obvious or anticipated by any one of the following JP 62219469, JP 19960173867, EP 0 798 791 each individually. Accordingly, the special technical feature linking the inventions, providing a **block** copolymer of acrylonitrile with listed comonomers does not provide a contribution over the prior art, and no single general inventive concept exists.

The requirement is still deemed proper and is therefore made FINAL.

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2. Newly submitted claims 35 and 36 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 35 and 36 are directed to the process of making a polymer described in claims 30 and 31, which were not elected by Applicant in Paper No. 8.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 35 and 36 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

3. Applicants' election of species exemplified in **Example 4 (see Paper No. 8, page 2, second line from the bottom)** is acknowledged. Claims readable on the **elected species**, namely claims **1, 2, 4, 5, 14, 16, 29 and 34 were examined on the merits.**

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1,2,4, 5 14, 16, 29 and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claims 1,2,4, 5, 14, 16, 29 and 34 are rejected claims as prolix because they contain such long recitations and /or unimportant details that the scope of the

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claimed invention is rendered indefinite thereby. Such long recitations or unimportant details hide or obscure the invention. *Ex parte Logan*, 1911 C.D. 10, 162 O.G. 538 (Comm'r Pat 1910). These claims are setting forth so many **optional elements** (i.e. "may or may not" "makes it possible" in relation to different permutations of homo- and copolymers) that that invention cannot **possibly reside** in ALL the combinations and is, therefore, rejected as prolix. See also *In re Ludwick*, 4 F.2d 959, 1925 C.D. 306,339 O.G. 3939 (D.C. Cir. 1925)

- The transitional word (i.e. between the preamble and the body of claim) **"characterized"** (as recited in the instant claims) and phrases incorporating it are common in applications of European origin. In U.S. practice claims containing those words and phrases are rejectable under 35 USC 112.2 when characterization may connote more than mere description (dictionary definition); in scientific parlance characterization may imply one or more physical steps or procedures (e.g. structure determination, elemental analysis, or qualitative tests) to identify a product. Since it is rare that applicant intends more than a mere description when using this language, physical steps are rarely disclosed. As such the reader may be unsure about the meaning of the wording of the claims, and additionally the scope of the claim is often unclear ("characterized conveys no degree of openness). Usually these troublesome words or phrases can be replaced by the standard transitional words, "having", "comprising", "wherein"

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and the like. The recited..... constitutes an indefinite subject matter, as per the metes and bounds of such engender an indeterminacy in scope.

- The language of Claim 14, is indefinite because it uses an improper form of a Markush Group. When groups recited in a claim are so related as to constitute a proper Markush group, they should be recited in the conventional manner or in the alternative, for example, " ... selected from the group, consisting of A, B, C and D".

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily

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published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 1, 2, 4, 5, 14, 29 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 95/02314

WO'314 discloses lithium ion conductive polymer electrolytes containing an amorphous **polyacrylonitrile copolymer** (see abstract). Polyacrylonitrile copolymers are obtained by copolymerizing a mixture of monomers, including an acrylonitrile or a derivative thereof, such as methacrylonitrile with a small amount of an additional monomer or mixture of additional monomers (page 9, lines 31-36). While it is contemplated that a large number of comonomers can be employed, the preferred comonomers are acrylic acid, methacrylic acid, itaconic acid and vinyl acetate (page 10, lines 1-6).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO'314 in view of U.S. 5,800,914.

WO'314 discloses electrolyte polymers based on polyacrylonitrile, with various (meth)acrylate comonomers, but does not specifically disclose copolymer of methacrylonitrile and glycidyl (meth)acrylate. However, WO'314 clearly teaches that PAN copolymers may be prepared by any known process, or may be obtained from any different commercial sources that produce PAN polymers. Such PAN polymers are widely known and typically used in fiber manufacturing. Further WO'314 provides number of sources for such polymers. Thus WO'314 motivates one skilled in the art to utilize a number of known polymers of acrylonitrile including (meth)acrylonitrile glycidyl methacrylate.



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US'914 discloses acrylonitrile- or methacrylonitrile-based copolymers, which include acrylonitrile-methyl methacrylate copolymer, acrylonitrile-methyl acrylate copolymer, acrylonitrile-ethyl methacrylate copolymer, acrylonitrile-ethyl acrylate copolymer, acrylonitrile-n-butyl methacrylate copolymer, acrylonitrile-glycidyl methacrylate copolymer, acrylonitrile-glycidyl acrylate copolymer, acrylonitrile-2-hydroxyethyl methacrylate copolymer, acrylonitrile-iso-butyl methacrylate copolymer, acrylonitrile-tert-butyl methacrylate copolymer, acrylonitrile-2-hydroxypropyl methacrylate copolymer, methacrylonitrile-methyl methacrylate copolymer, methacrylonitrile-methyl acrylate copolymer, methacrylonitrile-ethyl methacrylate copolymer, methacrylonitrile-ethyl acrylate copolymer, methacrylonitrile-n-butyl methacrylate copolymer, **methacrylonitrile-glycidyl methacrylate copolymer, methacrylonitrile-glycidyl acrylate copolymer,** methacrylonitrile-2-hydroxyethyl methacrylate copolymer, methacrylonitrile-iso-butyl methacrylate copolymer, methacrylonitrile-tert-butyl methacrylate copolymer, and methacrylonitrile-2-hydroxypropyl methacrylate copolymer, (see i.e. all acrylonitrile polymers of the instant invention, including the ones elected by Applicants for the prosecution of the instant claims.

Therefore, one skilled in the art would have found it obvious to employ the copolymers of US'914 as the PAN polymers, as suggested by generic teaching of WO'314 with the reasonable expectation of success.

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12. Claims 1,2,4, 5, 14, 29 and 34 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Abraham et al (U.S. 5,219,679) or over EP 0798791.

Abraham discloses conductive solid polymer electrolytes composed of solvates of Li salts immobilized (encapsulated) in a solid organic polymer matrix. In particular, this invention relates to solid polymer electrolytes derived from polyacrylonitrile, poly(tetraethylene glycol diacrylate), or poly(vinyl pyrrolidinone) (see abstract). Tables 1 and 2 provide for binary polymers of acrylonitrile and ethylene carbonate and propylene carbonate, Fig.2 provides addition of 1% of PEGDA, thus anticipating copolymers of acrylonitrile with carbonate containing comonomers.

EP' 791 discloses electrolyte copolymers of acrylonitrile and ethylene carbonate (propylene carbonate) and of acrylonitrile with vinyl acetate or with butadiene (see examples 1, 2 and 3 page 5). Thus copolymers of acrylonitrile are anticipated.

In the alternative the rejection is made under 35 USC 103 (a), because even if removed from the scope of 102(b) rejection, the generic teaching of Abraham and EP' 791 appears to embrace the genus of polyacrylonitrile copolymers with acrylate comonomers, and one skilled in the art would have been reasonable appraised to employ the non-embodied species motivated by generic teaching of Abraham and EP'791.

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**Conclusion**

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Maeda (U.S. 6,287,723) and Seiner (U.S. 3,770,604) disclose electrolyte copolymers of acrylonitrile.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tatyana Zalukaeva whose telephone number is (703) 308-8819. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (703) 308-2450. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

Tatyana Zalukaeva  
Examiner  
Art Unit 1713



July 3, 2002.